

(blue). Scale bars, 300  $\mu$ m. (B) Higher magnification of individual sections of OEs, hybridised with antisense OR-probes. SC, Sustentacular cells; NC, neuronal cells; BC, basal cells. Scale bar, 10  $\mu$ m.

Figure 8: Gene expression and function of human ORS for (-)-citronellal - (A) Candidate-(-)-citronellal-receptor gene in synthetic clusters on the mouse-chromosome 11B3-B5 (MC 11), and human chromosome 17p13.3 (HC 17). The arrows show the range and the orientation of the gene, drawn to scale of NCBI mouse and human genomic maps. The numbers indicate the amino acid-identity (%) between the gene products. (B) RT-PCR using gene-specific primers for human olfactory epithelium cDNA. -RT, reverse transcriptase was omitted. M, Marker sizes (base pairs) (C) Concentration-response ratios of (-)-citronellal for rho-tag(39)-01fr43 (filled circle), -LOC331758 (open circle), -OR1A1 (filled triangle), and -OR1A2 (open triangle) in HeLa-Cx43/CNGA2/G $\alpha$ -olf cells. Similar results were obtained in three independent FLIPR experiments. Arrow, human threshold-concentration (0,3  $\mu$ M).

~~Figure 9~~ Figure 10: Schematic depiction of the olfactory receptor-signalling pathway in HeLa-cells. The system consists of the receptor (A), the heterotrimeric G-protein (B), the adenylyl cyclase (C), and the channel CNGA2 (D).

~~Figure 10~~ Figure 9: General suitability of the cellular system for the characterisation of receptors that modify the intracellular concentration of cyclic nucleotides. (B) Particular guanylyl cyclase; (C) adrenergic receptor.

Figure 11: General suitability of the cellular system for the characterisation of receptors that modify the intracellular concentration of cyclic nucleotides, using the example of a pheromone receptor rt(39)-V1R-b2 with 2-heptanone, (A). Negative control with pertussistoxin (B), the toxin blocks the specific G protein G $\alpha$ -I, (C) Empty control; all three experiments with isoproterenol, which acts on the endogenous adrenergic receptors.

Figure 12: RT-PCR products of a) HeLa/CNGA2 mRNA and b) HeLa/Olf cells using gene-specific primers for the human proteins Gas and Gaolf. -RT = without reverse transcriptase, M, marker sizes (base pairs), c) Western blot analysis of HeLa/Cx43/CNGA2 cells (Gas), and HeLa/Olf cells (Gas and Gaolf). The anti-as-antibody as used recognises both G-proteins